

ECE 405

HW 1

Weather Dependent RFID Study

SD0920

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Dr. Glower

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The objective is to build a miniature weather station that will be used to measure the weather elements to help quantify the weather effects on RFID tags while the RFID signal integrity is being recorded separately. This weather study is to determine if RFID tags should be used in cattle management.

Weather measurements:

- Humidity
- Temperature
- Rainfall
- Wind speed
- Sunny/Cloudy
- Atmospheric Pressure

Demands:

1. Based on already assembled breadboard circuits for weather measurement sensors, design and build a single printed circuit board that contains all required weather measurement circuits. Projected completion date – March 1, 2010.
2. Design the circuit board to send measurement data to the embedded board inputs.
3. Have embedded board able to transfer data to a PC via serial port.
4. Have final PCB completed by beginning of April to give time for final testing and final modifications.
5. Have a single compiled program for the embedded board to read all weather measurement sensors and send data back to the PC.

This document describes all project requirements set forth by the advisor and/or client. Grading will be performed at the end of the semester according to the level at which these requirements are met.

Dr. Jacob Glower - Advisor

Ashish Roy

Dan Peterson

Divyanshu Narendra

Budget:

Part	Cost/ Unit	Quantity	Total Cost	Digi Key Part No.	Notes
MPX 4115A	10.34	5	51.7	MPXAZ4115A6T 1TR-ND	Pressure sensor
287-1040-ND	36.39	2	36.39	287-1040-ND	Pressure sensor
HCH-1000-001	5.16	3	15.48	480-2903-ND	Humidity sensor
S80-2903-ND	36.89	2	73.78	S80-2903-ND	Humidity sensor
480-2904-ND	5.28	3	15.84	480-2904-ND	Humidity sensor
DS18S20 - ND	2.28	3	6.84	DS18S20+TR- ND	Temperature sensor
LM-335-ND	1.12	3	3.36	497-1584-ND	Temperature sensor
LM-335Z-ND	1.28	3	3.84	LM335ZNS-ND	Temperature sensor
Rain Wise	**	1	**		Provided by NDSU
PIC 18F4620	7.94	3	23.82	PIC18F4620-I/P- ND	Micro processor
Miscellaneous Hardware			100		Includes : capacitor, resistors, clamps
Parts Shipping, Misc.			15		

Total Cost: 346.05

TIME-LINE:

This is the rough time-line by which our group has decided to work on, considering different objectives that need to be achieved before certain dates and deadlines.

Week	Dates	Objectives
1	Jan 17 th -23 rd	Regrouping, re-assessing the main objectives of ECE 405 and deciding upon deadlines
2	Jan 24 th -30 th	Building a common circuit schematic incorporating all the six-sensors and the board as a single entity; ordering any extra parts if needed
3	Jan 31 st -feb 6 th	Building the schematic using multisim and ultiboard and working with it's troubleshooting
4	Feb 7 th -13 th	Start with constructing the PCB using the schematic from previous week's work
5	Feb 14 th -20 th	Continue with the making of PCB; compiling programs for sensors to work with PIC (humidity, wind-speed and day/night sensor)
6	Feb 21 st - 27 th	Continue with building upon the circuit and also consult Dr. Glower on the ongoing progress and possible changes
7	Feb 28 th -March 6 th	March 1: deadline for the first finished product , with all the six sensors attached in a single microprocessor on the PCB
8	March 7 th - 13 th	Trouble shooting; programming the circuit
9	March 14 th -20 th	Trouble shooting; programming the circuit
10	March 21 st -27 th	Trouble shooting; programming the circuit
11	March 28 th -April 3 rd	April 1: deadline for the final finished product
12	April 4 th -April 10 th	Trouble shooting and testing; implementing any last-minute changes
13	April 11 th -17 th	Trouble shooting and testing; Making the product ready for client application and use